

## CHAPTER V

# THE EFFECTS OF MARRIAGE ON PHYSICAL HEALTH AND LONGEVITY

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The research evidence discussed in earlier chapters suggests that marriage (1) reduces certain health risk behaviors (in particular, heavy drinking); (2) improves access to health insurance; and (3) improves mental health (in particular, reducing depressive symptoms). Therefore, it follows that marriage may also have benefits for physical health and longevity. Indeed, studies consistently show that married people live longer and enjoy better physical health than unmarried people. This relationship has been found for more than 100 years (Murray 2000), for both men and women (Kaplan and Kronick 2006), in different countries (Brockmann and Klein 2004; Gardner and Oswald 2004; Hu and Goldman 1990; Manzoli et al. 2007; Matthews and Gump 2002), and for a wide range of measures of health and illness (Gore et al. 2005; Gove 1973; Krongrad et al. 1996).

However, much of the research evidence in this area is based on simple descriptive analyses that do not adequately distinguish the causal effect of marriage from the possible effects of healthier people selecting into marriage. This is partly because many of the methods researchers have developed to separate these effects (for example, relating transitions in marital status to subsequent changes in health behaviors or outcomes) do not easily transfer to studies of physical health and longevity. For example, because a person's longevity is undetermined until the very end of life, it is impossible to assess how longevity changes in response to a transition in marital status. Likewise, whereas a change in marital status might have an immediate effect on a person's health risk behaviors, health insurance status, or mental health, the possible consequences for most physical health outcomes (for example, the chances of developing a certain disease or chronic health condition) likely unfold over a longer time frame and would not be apparent in the period immediately after a transition into or out of marriage.

In this chapter, we review recent research evidence on the effects of marriage on physical health and longevity. We begin by reviewing evidence on the links between marriage and physical health, focusing on the few rigorous studies that relate transitions into or out of marriage to changes in physical health. Because few studies meet this criterion, however, we also review selected descriptive evidence to broaden the range of physical health outcomes covered. We then review evidence on the links between marriage and longevity. Although

many studies document a relationship between marriage and increased longevity, most consist of basic descriptive comparisons of differences in mortality rates between married and unmarried people over study periods of 10 to 20 years. We provide a brief overview of the main findings from this research, then turn to the few studies that use more rigorous methods to distinguish the causal effect of marriage from possible selection effects. A main conclusion of this chapter is that the research evidence on the effects of marriage on physical health is more speculative than the evidence on the effects of marriage on health risk behaviors, health insurance status, and mental health.

## **MARRIAGE AND PHYSICAL HEALTH**

Little rigorous research evidence exists on the effect of marriage on physical health. Many studies suggest that poor marital quality can have a significant negative impact on physical health (for a review, see Kiecolt-Glaser and Newton 2001); however, few assess the effect of marriage itself. As with other health outcomes discussed in earlier chapters, the best studies in this area relate transitions into or out of marriage to subsequent changes in physical health. However, by concentrating on changes in physical health in the period immediately after a transition in marital status, these studies focus more on the short-term effects of marriage than on possible long-term effects. Because physical health problems become more common with age, studies in this area also focus more on the effect of transitions out of marriage for older adults (often widowhood) than the effect of transitions into marriage for younger adults. In this section, we summarize a few of the best studies of the links between marriage and physical health. Most of the studies we review suggest at least some benefit of marriage for physical health, but possible gender differences in the relationship remain unclear.

### **Effects on General Physical Health Status**

A recent study by Williams and Umberson (2004) provides some of the most rigorous evidence on the effect of marriage on physical health. This study uses longitudinal data from the nationally representative Americans' Changing Lives (ACL) study to examine the effects of transitions into and out of marriage on changes in physical health. The data for the study were collected over an eight-year period from 1986 to 1994, when the sample members ranged in age from 24 to over 90. Like many studies in this area, the Williams and Umberson study measures physical health with a simple survey question that asks sample members to rate their health on a five-point scale ranging from "poor" to "excellent." The study's statistical models estimate the effects of marital transitions separately by gender and age group and include additional baseline controls for race, education, income, and employment.

Results of the study suggest that, regardless of age, the effects of marital transitions on self-rated health are generally larger for men than women. For both older and younger men, the transition into first marriage is associated with a significant improvement in self-rated health. For example, estimates show that, for men, the chances of reporting "very good" or "excellent" health improve significantly with the transition into first marriage. This positive effect persists through at least the first five years of marriage and applies equally to men of

all ages. In contrast, the study shows that marital dissolution has a significant negative effect on men's self-rated health, but only for men over age 50. For older men, self-rated health declines in connection with divorce. For younger men, however, divorce is associated with a modest improvement in self-rated health. Additional estimates show that, for older men, widowhood also has a significant negative effect on self-rated health.

For women, the study finds little evidence that transitions either into or out of marriage are related to changes in self-rated health, regardless of age. The transition into first marriage is associated with a small, statistically insignificant improvement in women's self-rated health. The study finds no relationship between marital dissolution and women's self-rated health. It does find some limited evidence of a positive effect of remarriage on self-rated health. However, this remarriage effect is only statistically significant for women under age 40, who are much less likely than older women to be entering a second marriage.

It is possible that, by using changes in self-rated health as a proxy for changes in physical health, the Williams and Umberson study understates the true causal effect of marriage on physical health and, thus, that the link between marriage and physical health is stronger than these results suggest. Although self-rated health is highly correlated with more objective physical health indicators, such as blood pressure, disability, and longevity (Ferraro and Farmer 1999), changes in self-rated health may be a poor proxy for changes in physical health. This could happen if, for example, people tend to rate their health in the same category from year to year, even as their health declines with age. Consistent with this possibility, in the Williams and Umberson study, most of the sample members rate their health as either very good or excellent (the top two categories), and the percentage of sample members reporting very good or excellent health declines only slightly with age. This pattern suggests that trends in self-rated health may not reflect more subtle changes in respondents' underlying physical health status, and that a more refined health indicator might show a significant effect of marriage on women's physical health and a stronger effect of marriage on men's physical health.

### **Effects on Other Measures of Physical Health**

Other recent studies address this limitation by focusing on alternative physical health indicators. For example, the study by Prigerson et al. (2000), described briefly in Chapter III, uses longitudinal data from the ACL study to relate transitions in marital status to changes in (1) chronic health conditions (for example, arthritis, hypertension, and heart disease); and (2) limitations in physical functioning (for example, difficulty walking or getting around the house). Unlike the study by Williams and Umberson, the study by Prigerson et al. focuses only on the transition out of marriage due to widowhood. Because widowhood is uncommon among younger adults, the study also limits its analysis to men and women at least 50 years old at the beginning of the study period. To increase the sample size, the study combines data for men and women. The study's statistical models include baseline adjustments for age, gender, socioeconomic status, and mental health.

Their results suggest that widowhood is associated with increased limitation in physical functioning and an increased number of chronic health conditions. For example, adjusting

for the initial prevalence of these conditions, these researchers find that men and women who become widowed suffer from an average of 2.2 chronic health conditions at the end of the follow-up period, compared with an average of 1.8 chronic conditions among similar sample members who remain married. These results are similar to the estimates Williams and Umberson report for the effect of widowhood on men's self-rated health. However, because the study by Prigerson et al. does not report estimates separately by gender, it is unclear whether their results are due mostly to the effect of widowhood on men's health or, instead, apply equally to both men and women.

A recent study by Lorenz et al. (2006) focuses more specifically on the links between marriage and women's physical health by examining the effect of divorce on 10-year trends in physical health among a local sample of roughly 400 rural women in the state of Iowa. The study does not include men. The data for the study were collected throughout the 1990s, when most of the women were in their 40s. The study compares trends in physical health for a group of women who were recently divorced at the beginning of the study period with trends for a similar group of women who were married throughout the study period. Physical health is measured with a basic count of specific illnesses (for example, common colds or sore throats) and health conditions (for example, asthma or diabetes) experienced in the one-year period immediately preceding each survey interview.

The study finds a significant effect of divorce on 10-year trends in women's physical health. Estimates show that physical health did not significantly differ between married and recently divorced women at the beginning of the study period, controlling for baseline differences in age, education, and income. By the end of the period, however, the divorced women reported significantly worse physical health than the women who had remained married.

Because the social and economic consequences of divorce likely differ for women living in rural Iowa than for women living in other parts of the country, these findings may not generalize to the broader national population of women. The effect of divorce on physical health might also be different for men. However, the homogeneity of the study sample has the advantage of reducing the need to adjust for a detailed list of baseline characteristics and helps distinguish the effect of divorce from the effects of other personal characteristics. The results of this study also have implications for the Williams and Umberson study described earlier. In particular, by showing that divorce has a significant effect on women's physical health as measured by reports of specific illnesses and conditions, the results of this study support the possibility that the measure of self-rated health featured in the Williams and Umberson study may not be specific enough to find a significant effect of marriage on women's physical health.

Finally, a recent study by Zhang and Hayward (2006) examines the effect of marriage on the risk of cardiovascular disease, a leading cause of death in the United States for both men and women. The study is based on longitudinal data from the nationally representative Health and Retirement Survey, which has tracked a large sample of men and women in their 50s and 60s since the early 1990s. The data were collected through interviews conducted every two years over an eight-year study period. The study examines the association between

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marriage and the risk of developing cardiovascular disease, controlling for basic demographic characteristics like race and age. To calculate this association, the study relates concurrent measures of marital status and cardiovascular disease assessed at each wave of the survey. By assessing marital status at each wave, the study can account for any changes in marital status occurring during the study period. However, because marital status and cardiovascular disease are always measured concurrently, the study cannot distinguish the causal effect of marriage from possible selection effects. Even so, we include the study in our review because there is so little evidence on the effects of marriage on specific indicators of physical health.

For men, the study finds no evidence of a relationship between marriage and risk of cardiovascular disease. For women, however, the results indicate that marital status is significantly associated with risk of cardiovascular disease. In particular, the study finds that risk of cardiovascular disease is about 60 percent higher for divorced women than it is for women in their first marriage and about 30 percent higher for widows than for women in their first marriage. However, because the study's statistical models measure marital status and cardiovascular disease concurrently, it is unclear whether these differences represent a causal effect of marriage or whether they represent the effect of cardiovascular disease in causing marital stress and disruption. Moreover, because the study does not adjust for initial health status prior to the assessment of either marital status or cardiovascular disease, it is also possible that the results represent the effect of poor initial health status in causing both marital disruptions and increased risk of cardiovascular disease.

## **MARRIAGE AND LONGEVITY**

There are many more studies of the links between marriage and longevity than of the links between marriage and physical health. For example, studies have documented a relationship between marriage and longevity for both men and women (Kaplan and Kronick 2006); in the United States, as well as in several European and Asian countries (Manzoli et al. 2007); using historical marriage and mortality records, as well as more recent survey data (Murray 2000); and for a range of specific causes of death, including homicides, suicides, accidents, cardiovascular disease, infectious diseases like AIDS, and certain types of cancers (Gore et al. 2005; Kaplan and Kronick 2006; Krongrad et al. 2006).

However, the research evidence in this area is generally less rigorous than the research reviewed in earlier chapters, in part because it is impossible to relate transitions into and out of marriage to changes in longevity. In addition, researchers have had little success in developing other statistical methods to adequately distinguish the causal effect of marriage on longevity from the possible effects of selection into marriage on the basis of physical health or other personal characteristics. In this section, we summarize some of the main descriptive results in this area, as well as more limited results from the few studies that attempt to separate the protective effect of marriage from the effects of selection into marriage.

A recent review article by Manzoli et al. (2007) summarizes much of the research evidence on the links between marriage and longevity published since the mid-1990s. Their review focuses mostly on analyses of older adults (at least 65 years old) but includes analyses

of both domestic and foreign study samples. The review is limited to studies meeting some minimum research standards, such as controlling for age and gender. Using these criteria, Manzoli et al. identify 53 independent estimates of the effect of marriage on longevity from a total of 40 different studies. Of the 53 estimates included in the review, 18 are based on data for U.S. study samples.

The studies included in the review all estimate the effect of marriage on longevity by comparing mortality rates between married and unmarried people over study periods ranging from 3 to 21 years. On average, the studies show that mortality rates are about 18 percent lower for married people than unmarried people over the different study periods. Not all of the studies estimate the effect of marriage separately by gender. However, of the studies that do examine gender differences, the results show no major differences between men and women in the average effect of marriage on longevity.

A recent study by Kaplan and Kronick (2006) provides more detailed evidence on the links between marriage and longevity for the U.S. population. This study uses data from the nationally representative National Health Interview Survey to examine the effect of marriage on longevity over an eight-year period beginning in 1989. The sample members include both men and women and range in age from 19 to over 85. The study's statistical procedures use marital status at baseline to predict the odds of mortality during the eight-year follow-up period, adjusting for baseline differences in age, gender, race, education, income, and self-rated health.

Results of the study show that the odds of mortality are 39 percent higher for widows than for married people, 27 percent higher for those divorced or separated, and 58 percent higher for the never married. These figures are similar to those reported in an early study by Sorlie et al. (1995). Additional analyses show that the difference between the married and never married is larger for younger men than younger women but similar for both genders at older ages. The study does not report gender differences in the results for those who are divorced or widowed. Controlling for baseline health status helps reduce the possible bias caused by the selection of healthier people into marriage; however, it may also control for some of the health benefits of marriage and, thus, suppress the total effect of marriage on longevity. By not adjusting for changes in marital status, the study also likely misclassifies marital status at the time of death for some members of the study sample.

A more rigorous study by Lillard and Panis (1996) reports similar results using data from the longitudinal Panel Study of Income Dynamics. This study estimates the effects of marriage on men's longevity from 1984 to 1990. Sample members ranged in age from under 40 to over 80 when the data were collected. The study's statistical models examine the effect of marriage on men's mortality over the six-year follow-up period, controlling for baseline differences in race, age, and education, as well as for changes in marital status. The study compares the effect of marriage before and after controlling for (1) baseline differences in self-rated health (as measured on a five-point scale ranging from "poor" to "excellent"); and (2) an adjustment for selection into marriage that uses other information in the data to predict the effect of health and other personal characteristics on individual transitions into and out of marriage.

The study finds that the risk of mortality over the six-year study period was significantly lower for married men than for divorced, widowed, and never-married men, controlling for baseline demographic characteristics and changes in marital status. After controlling for baseline differences in self-rated health and the adjustment for selection into marriage, the study finds no significant difference between married and divorced men, but the gap between married men and both widowed and never-married men remains statistically significant.

A later study by Murray (2000) provides more rigorous evidence on the effect of marriage on longevity, but only for a highly select study sample. This study uses historical data for a select group of male Amherst College graduates born in the mid-19th century. One of the main strengths of the study is that the data include height and weight measurements for the men before they were married, as well as follow-up information on marital histories and eventual longevity. By using the weight and height information as a proxy for physical health before entry into first marriage, the study can estimate the effect of marriage on subsequent longevity while controlling for possible selection into marriage on the basis of physical health. Results of the study show that marriage reduces the conditional risk of men's mortality at any given age by about 15 percent, controlling for premarital health and weight. The unique characteristics of the study sample caution against generalizing these results to other populations. The relationship between marriage and longevity might also be different for women, as well as for more recent cohorts. Even so, the study is important because it provides some of the only rigorous evidence showing that the apparent effect of marriage on longevity does not primarily reflect selection of healthier people into marriage.

## CONCLUSIONS AND LIMITATIONS

The research evidence on the links between marriage on physical health and longevity is more limited than the evidence discussed in earlier chapters concerning the effects of marriage on other health outcomes. Few studies have used nationally representative data to rigorously assess the effect of marriage on physical health outcomes, and studies of the effect of marriage on longevity often rely on descriptive methods that do not adequately control for the possible selection of healthier people into marriage. Examining the effects of marriage on these outcomes by examining the effects of marital transitions is one useful strategy for addressing selection. However, measures of physical health generally do not lend themselves well to this technique.

Limited evidence from studies of physical health show a significant effect of transitions into and out of marriage on 5-year trends in men's self-rated health and a significant effect of divorce on 10-year trends in women's physical health. One study also shows an effect of widowhood on men's and women's chronic health conditions and ability to perform basic physical activities. There is little evidence on the links between marriage and specific health conditions or diseases, with the exception of one study that suggests a possible link between marriage and the risk of cardiovascular disease for women; however, the study finds no such effect for men. Therefore, the existing research evidence in this area is limited to a narrow

range of health measures and has not fully assessed the possible long-term consequences of marriage for physical health.

The strongest evidence of a positive effect of marriage on men's and women's longevity comes more from the robustness of this relationship across many studies than from the particular results of any single study. Many studies have documented a relationship between marriage and longevity; however, few use methods to distinguish the protective effect of marriage from possible selection effects. Moreover, the robustness of the relationship between marriage and health cannot alone establish a causal connection, if only because most of the research in this area may suffer from the same type of bias. A more definitive test of the effect of marriage on physical health and longevity will require very long-term longitudinal data that afford the opportunity to control for differences in initial health status measured before sample members begin to marry. With data of this type, researchers can examine how differing marital histories affect physical health, controlling for any initial health differences that may exist between those who marry and remain married and those who do not.